

REMARKS

The comments of the applicant below are each preceded by related comments of the examiner (in small, bold type).

1. The specification is objected to because of the following formalities:
 - (1) On page 1, line 14, the examiner suggest inserting ";" between "of" and "or"
 - (2) On page 2, line 3, the examiner suggest inserting ";" between "at" and "or"

Appropriate correction is required.

Amendments have been made.

Claim Objections

2. Claims 1-18,25-27, and 35-38 are objected to because of the following informalities:
 - (1) Claim 1, line 7, "a neighborhood" should be changed to "the neighbourhood", the same informality was found in line 5, of claim 37
 - (2) Claim 4, line 2, "the value" should be changed to "a value", the same informality was found in line 2, of claim 23
 - (3) Claim 8, line 2, "a forward" should be changed to "the forward", the same informality was found in line 2, of claim 16
 - (4) Claim 18, line 7, "a convolution" should be changed to "the convolution", the same informality was found in line 8, of claim 37
 - (5) Claim 25, line 4, "a substantially" should be changed to "the substantially"
 - (6) Claim 35, line 3, "a forward" should be changed to "the forward"
 - (7) Claim 37, line 10, "a pixel" should be changed to "the pixel"
 - (8) Claim 38, line 11, "a depth" should be changed to "the depth"

Appropriate correction is required.

Claims 4 and 23 have been amended. Regarding claim 16, the informality described by the examiner does not appear at the specified location. Regarding claims 1, 7, 8, 18, 25, 35, 37 and 38, the applicant respectfully disagrees and requests the examiner to explain why the amendments are required.

4. Claims 1-3, 5-7, 11-14, 18, 20-22, 24-26, 30-33, and 37 are rejected under 35 U.S.C. 102(e) as being anticipated by Kaufman et al. (USPGPUB 2003/0095693)

(1) Regarding claim 1 and 20:

As shown in figure 7, steps 126 and 128, Kaufman et al. disclose a method and software product (figure 3, paragraph [0023], line 5-7) for filtering an image (including a plurality of pixels (paragraph [0013], line 5-9), the method comprising:

receiving a forward kernel centered at a first pixel in the image, the forward kernel assigning forward weights to pixels in a neighborhood surrounding the first pixel (paragraph [0116], line 7-9);

specifying a backward kernel centered at a second pixel within the neighborhood surrounding the first pixel based on a focal attribute of the image at the second pixel, the backward kernel assigning backward weights to pixels in a neighborhood surrounding the second pixel (paragraph [0120], line 1-7), (the examiner interpreted the back projection reconstruction as the backward kernel)

determining a convolution weight of the second pixel based on the backward kernel and the forward kernel (paragraph [0189], line 1-14), (the examiner interpreted the forward kernel as Fourier transform, and backward kernel as inverse Fourier transform)

using the convolution weight and a pixel value of the second pixel to generate a new value of the first pixel (paragraph [0108], line 7), (the examiner interpreted that the convolution kernel formula recited in paragraph [0108], line 7 can be used to generate a new value of the first pixel).

The applicant disagrees.

Claim 1 describes “a second pixel within the neighborhood surrounding [a] first pixel” and recites “specifying a backward kernel centered at [the] second pixel.” The examiner incorrectly interpreted the “back projection reconstruction” and “inverse Fourier transform” respectively, of Kaufman as the backward kernel of claim 1. (Paragraph 4. of Office Action) However, the cited portions of Kaufman do not refer to a backward kernel at all, let alone how such a backward kernel would be specified.

In Kaufman, back projection reconstruction is an image filtering method of “multiplying profiles of [an] image by a [filter] function,” tracing each “[CT scanner] detector’s modified signal ... back to the source,” and “[providing a weight] at each pixel in the image ... the weights ... added up to obtain the [filtered] image.” (paragraph [0120], lines 1-7) The resulting image resolution is matched to the resolution of a reference image. (the phantom of Fig. 5, steps 124-128 of Fig. 7) In contrast, the backward kernel of claim 1 is “centered at a second pixel within the neighborhood surrounding [a] first pixel ... the backward kernel assigning backward

weights to pixels in a neighborhood surrounding the second pixel." An example of the backward kernel may be a window or array of predetermined shape or size that "assigns backward weights to pixels in a neighborhood surrounding the center of the backward kernel." (page 7, paragraph 2) Among other things, the backward kernel may enable the generation of the local filter kernel 125 that is used by the convolution component 120 "to generate one or more new values for ... [pixels] ... in the filtered image 20." (page 8, paragraph 2) Nothing in the cited portions of Kaufman describes or makes obvious "specifying a backward kernel centered at a second pixel."

Further, in Kaufman, the inverse Fourier transform of an image is the filtered image in the spatial domain obtained by "multiplying [the image] by the Fourier transform of the smoothing kernel [in the frequency domain]." (paragraph [0109], lines 1-6) As such, the inverse Fourier transform is used to adjust the resolution of the image to match the resolution of a reference image. (paragraphs [0108]-[0109]) Nothing in the cited portions of Kaufman describes or makes obvious "a second pixel within the neighborhood surrounding the first pixel" and "[specifies] a backward kernel centered at [the] second pixel."

For at least the same reason as claim 1, claim 20 is not anticipated or made obvious by Kaufman.

6. Claims 9-10,15,19,28-29,34, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman et al. in view of Szeliski et al. (US 6,215,496)

- (1) Regarding claim 9 and 28 ...
- (2) Regarding claim 10 and 29 ...
- (3) Regarding claim 15 and 34 ...
- (4) Regarding claim 19 and 38 ...

7. Claims 16 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman et al. in view of Dowski et al. (USPGPUB 2003/0169944)

8. Claims 17 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman et al. in view of Dowski et al. as applied to claim 16, and further in view of Lee (US 2003/0197877)

For at least the same reason as claim 1, independent claims 19 and 38 are not anticipated or made obvious by the cited references.

9. Claims 4,8,23 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The applicant acknowledges that the claims are patentable. The applicant does not concede that there are not other good reasons for the patentability of these and other claims.

All of the dependent claims are patentable for at least similar reasons as those for the claims on which they depend are patentable.

Any circumstance in which the applicant has (a) addressed certain comments of the examiner does not mean that the applicant concedes other comments of the examiner, (b) made arguments for the patentability of some claims does not mean that there are not other good reasons for patentability of those claims and other claims, or (c) amended or canceled a claim does not mean that the applicant concedes any of the examiner's positions with respect to that claim or other claims.

Enclosed Petition for One Month Extension of Time. The fees in the amount of \$120 are being paid concurrently on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other required fees to deposit account 06-1050, referencing the attorney docket number shown above.

Date: _____

1/11/04

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